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Helminthological Immunity and the Control of Helminthiasis among Grazing Animals.*

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Your President has been sufficiently rash to suggest that a specialist be asked to open a discussion at one of your meetings, and your Secretary sufficiently devoted to send a letter not only giving what was to me a very welcome invitation, but allowing me to choose my own subject! The dangers of asking a specialist to talk about his own very particular interest are well known, and if any blame is to be attached to anyone over this discussion I should like to take evasive action right away by saying that it really attaches to them and not to me. Should, however, any further excuse be needed for the title of this paper, it is to be found in the difference between a professional veterinary surgeon and a quack, the latter being content with sufficient information to enable him to treat disease and keep up appearances, but the professional man having an acquaintance with all the relevant knowledge that enables him to understand as completely as possible every aspect of animal disease on which he is likely to be consulted. I may claim, therefore, to be well within the veterinary practitioner's proper sphere of operations in dealing with the subject matter of this paper.

The most economically important part of the work of a veterinary parasitologist has to deal with the group diseases of grazing animals caused by helminths. These diseases have certain epidemiological characteristics in common and recent observations have done much to elucidate their connection with the conditions under which animals are maintained at pasture, and with the condition of the pastures themselves. Two recent contributions from Weybridge have dealt with the effect of the parasitic worms upon the host, showing the importance of the sub-clinical form of helminthic disease[4] and the effect of nutrition on parasitic disease[5]. These essays were an attempt to apply the more recent laboratory advances in helminthology to the epidemiology of worm diseases as they appear on the farm and particularly of those associated with strongyloid nematodes of grazing animals. The present contribution is an addition to the preceding two and is an endeavour to show the value of a knowledge of helminthological immunity to the fuller understanding of these group diseases, and to indicate practical applications for the institution of control measures.

The mention of the "acquisition of immunity" to helminthic disease still comes as a surprise to many veterinarians, and it is certain in choosing this subject that I shall not be boring you with anything that is too familiar. The danger is the one to which I have already referred, that it will savour too much of the specialist and be too new to stimulate discussion.

Up to the present time the subject of immunology has been almost exclusively in the bacteriologist's hands. The bacteriologists have been the pioneers and there is a tendency to accept their work *en bloc* and to think along bacteriological lines of toxins, anti-toxins, vaccines and sera. Then, finding no practical application to helminthology, the whole phenomenon tends to be discounted as of no value in the understanding of helminthic disease, whereas specific applications of some aspects of the subject actually are of first grade importance.

A quibble is sometimes raised over the word "immunity," particularly in relation to macroscopic parasites, "resistance" being suggested as a better term. No doubt the original meaning was that of complete insusceptibility to a disease but the fuller investigation of that quality has shown it to exist in varying degrees and in consequence the term "immunity" has acquired a relative as well as an absolute significance. It is only recently that there has been any extensive investigation of the immunology of helminthiasis.

During the early investigations there was a tendency to regard the reactions between the host and its helminthic parasites as different from those between host and bacterial parasites, but further investigation shows them to be of the same essential nature. One noticeable feature of the writings on helminthological immunity is a tendency to differentiate between a resistance to the process of infection, and a resistance to the injurious effects of the parasites that have already successfully invaded. This apparent difference may, however, be ascribed on the one hand to the ease with which individual helminth parasites may be observed in a healthy animal, and on the other hand to the highly specialised procedure which has to be carried out before the presence of pathogenic bacteria can be demonstrated in an animal showing no symptoms of the disease.

It is not proposed to deal with helminthological immunity in general. Comprehensive accounts may be found elsewhere [1], [2] and [3] but the briefest indication of its various aspects may just be mentioned in passing. Apart from "species immunity," which is merely an incompatibility, a negative thing, the most important manifestations are those of "age immunity," a resistance which develops as an animal reaches a certain stage of maturity; "acquired immunity," a resistance which develops as a result of previous infestation with the parasite concerned; and "premunition," a resistance which in some little-understood way is dependent upon the concurrent existence of a light infestation with that parasite.

The mechanism is a very complex one indeed and appears to depend in part upon the development of immune substances in the body fluids, upon the education of cells, the production of special cells and the growth of special tissues.

The ultimate effect upon the parasitic worms has a more practical bearing and may receive a little fuller mention. The most spectacular evidence of the arrival at a state of immunity is seen in the expulsion of the major part of an infestation sometimes witnessed in what may be described as a dramatic way that is most impressive to the feminine owners of puppies infested with ascarids. Laboratory observations on the egg output of parasitic worms have also demonstrated the sudden nature of this expulsion of the greater part of an infestation, as soon as the appropriate stage of immunity has been attained. After reaching this stage the host becomes relatively resistant to further infection and additions to the existing infection can only be induced under special circumstances which will receive a further mention.

A third interesting manifestation of the development of immunity in an infected animal is the inhibition of egg production in female worms which is important from the practical aspect, even if it were only because of the way in which it affects the reliability of the egg-counting technique. Partial inhibition of egg production is one of the earlier manifestations of the development of immunity and an almost complete suppression of egg production has been recorded, so that great caution should be observed in interpreting the results of faecal examinations in suspected cases of helminthiasis in animals approaching the immune age.

The last general observation concerns the disorganisation of helminthological immunity through the operation of factors injurious to the health of the host. The most important of these factors is a lowering of the general nutritional level; well fed animals maintain their resistance even against a surprisingly high rate of infestation but poorly fed animals are unable to do so and in the presence of a rate of intake of larvae that would be of comparatively little account to vigorous animals may begin to show signs of more or less severe parasitic disease. Certain specific dietary deficiencies, notably vitamins, and possibly also certain minerals, even trace elements, are capable of producing a similar effect; as may also the existence of debilitating diseases from other causes.—These effects have been dealt with more fully in a previous contribution in connection with the development of sub-clinical helminthiases, particularly among store animals which are frequently maintained on the borderline of starvation.

It might be argued by some, and I can believe that it might even be generally agreed in some quarters, that all of these various manifestations of immunity are really of academic interest, for the consideration of laboratory workers only, and are of no concern to the clinician working with animals under farm conditions. Nothing, I feel, could be further from the truth. A little consideration will show that far from being a weak and indefinite factor in the control of helminthiases this immunity plays a most important, if not *the* most important role on the farm. It must be on account of the lack of dramatic effect that the importance of helminthic immunity tends to be discounted. M. C. Hall, the great American parasitologist, called attention to this factor in the popular estimation of the relative importance of various groups of diseases. We all know in this

* Paper based on an address given to the South-Western Division of the N.V.M.A., July 23rd, 1943, and to the Yorkshire Division of the N.V.M.A., January 28th, 1944.

country how, in the mind of the general public, foot-and-mouth disease is regarded as the most important of all animal diseases, simply because the cattle are dragged out and shot, and burned, and the black smoke drifts over the sky. There is something dramatic about it and it impresses. The same applies to acute diseases like anthrax; a cow is well one day and dead the next, it is something unusual and striking, a real disease. The parasitic worms, however, are always present and we become so used to the sub-clinical state of parasitism that we fail to notice that it is there at all.

It is for some such reason as that that we fail to give due recognition to the importance of the immunity responses of grazing animals in the control of helminthiases. Without this mechanism it would be quite impossible to maintain our grazing animals on enclosed pastures in the way that we do. They would all quickly die of helminthiases. In grazing ordinary pastures towards the end of the summer lambs are found to be taking in some 4,000 or 5,000 larval worms daily. The individual adult worms are known to be capable of living for many months, and in some instances for many years, so that two or three weeks of such grazing would be sufficient to produce severe disease were it not for the operation of the immunity mechanism. Far from being weak and indefinite this immunity of adult horses to strongylosis, of cattle to husk or of sheep to parasitic gastritis is a very strong immunity indeed. Not infrequently fat healthy ewes may be seen grazing the same pastures with their lambs which are dying of parasitic gastritis, in spite of the fact that the larval intake of the ewes is probably higher than that of the lambs. The same kind of thing may be seen to occur with several helminthic infections in horses and cattle, the adult animals remaining healthy under the same conditions in which the young contract severe and fatal disease.

This is no theoretical immunity, therefore, of mere academic interest, but is a very strong and vitally essential protection whereby grazing animals remain reasonably healthy under unnaturally trying conditions of pasturing, which, apart from that protection, would undoubtedly result in their death.

Perhaps I appear to be laying unnecessary stress on this point, but I have often found in myself a reluctance to *notice* the significance of an obvious fact, and it seems reasonable to suppose that others, belonging to the same species—*Homo* self-styled *sapiens*—should have the same experience. The process of infection, *i.e.*, the initial attack of the parasitic worms, is a more constant and unrelenting one than obtains in the case of diseases caused by most other kinds of parasites, where entry into the host appears to be more casual and intermittent. There are special adaptations on the part of the parasite whereby a constant stream of infective material is deposited by the grazing animals and the infective organisms climb up into the herbage to ensure their return to the host. The grazing animal, therefore, is constantly assailed; there is no dodging of disease by dodging the initial infection, but only through the development of the kind of resistance that has been described.

Looked at from the epidemiological viewpoint the immunity factor is seen in a light of even greater importance. The helminthiases of grazing animals being group diseases, with the pastures serving as a medium for the transference of infestation, the raising or lowering the general level of immunity quickly brings about a change in the rate of intake of infective larvae. When immune animals are turned into heavily infected pastures a diminution in the number of larvae per pound of herbage follows. Where young susceptible animals are put in, the concentration of larvae per pound of herbage rises rapidly and there is a tendency for the worm population to rise progressively—a result which would also follow the addition of a number of susceptible animals to a group of non-resistant ones, although the effect would then be less marked.

Recognising, therefore, the importance of the immunity reaction in the grazing animals, it is obvious that one of the directions for our efforts to control disease should be to assist the operation of this powerful agent. For the purpose of extracting the utmost benefit from our knowledge of immunity, it might even be advantageous to regard the whole problem of helminth control among grazing animals as exclusively an immunity problem. The avoidance of disease, then, would depend entirely upon the successful establishment of immunity, and the pathogenic action of parasites be regarded as nothing more than a delay in the development of immunity, or a disorganisation of an immunity that had already become established.

If we apply that idea to one or two specific types of outbreak we may, perhaps, understand their occurrence more clearly. Among lambs, the most prevalent type of outbreak occurs a short time after weaning, when the herbage is of poor quality, and often also of insufficient quantity. The susceptible lambs are then carrying a large number of worms, the herbage is also carrying a maximum concentration of infective larvae, the deprivation of the last dregs of their mothers' milk adds the last straw to the strain and the lamb becomes a casualty. Anthelmintic treatment at this time assists the establishment of immunity by removing much of the strain caused by excessive infestation; supplementary food also plays an important part in assisting the body to build up the immunity at this critical period, and a move to clean pasture gives further assistance by lowering the strain of an excessively high rate of intake of infective larvae. It is advantageous to employ all of these various modes of assistance at, or about the time of, weaning.

Groups of lambs may often be seen at about this time of the year, or a little later, in November and December, in which some individuals are relatively fat and carry only a light infestation of worms, and others are emaciated, anaemic and loaded with parasites. An occurrence of this kind is an example of a group of animals which have been kept on the borderline of the development of immunity, some individuals have attained it successfully and thrown off their parasites, but others not. Here, again, supplementary feeding, or anthelmintic treatment, will work wonders. If on economic grounds a comparison must be made the anthelmintic treatment is found to be the cheaper, but the maximum benefit is to be derived from the use of both.

An interesting question may be raised here, as to whether early lambs, or late lambs, are the more likely to suffer from parasitic infestations. Granting that the greatest stress comes at the end of the summer, the lambs which are born early in the year will have a longer grazing period in which to collect a parasitic infestation prior to the onset of the greatest strain at the end of the summer. On the other hand, the younger lambs, born later in the year, will have to face this strain at a younger and less resistant age. It would be interesting to hear, in the subsequent discussion, of actual observations which may have been made by you on this point.

A knowledge of the power of this immunity also helps one to understand the uses that may be made of adult stock in the cleaning of pastures. This point, I believe, is a newly recognised factor in the management of grazing animals on pastures. The value of alternating the grazing by different kinds of hosts has long been recognised as a useful aid in the control of parasitism. In view of the strength of adult immunity, however, it is obvious that immune adult animals are capable of performing the same useful function; the thousands of infective larvae which they ingest daily are destroyed and they may graze relatively heavily infected pasture with impunity so long as their general bodily condition is maintained.

If one looks a little more deeply into this situation it will be seen that although adult animals may be adding infective larvae to the pastures—in that they invariably carry a few parasites and their faeces contain eggs—the nett result of their grazing in a heavily infected pasture is to reduce the number of larvae and not to add to them. A specific example will help here. Data collected in the examination of faeces and of pasture herbage show that each lamb of a reasonably heavily infected group may be passing on to the pasture some 8,000,000 eggs daily and be acquiring some 4,000 infective larvae while grazing. These figures are approximations arrived at from actual observations under grazing conditions, and give an idea of the turnover of infective material towards the end of the grazing season. If then normal, resistant ewes be placed on the same pasture along with the lambs, each ewe will eat off (and destroy) some 4,000 larvae daily but will only add to the pasture some 800,000 eggs, about one-tenth of the number added by the lambs. In other words, a larval concentration of 400 to 500 larvae per pound of herbage can only be maintained where lambs are passing some 8,000,000 eggs daily and ewes which remove ten times as many infective larvae as they add to the pasture exert a very powerful influence in reducing the danger of a heavily contaminated pasture.

Theoretically, therefore, if the nutritional factor be discounted even the *addition* of immune adult animals to pasture is of benefit to the young stock there grazing and the infestation of the herbage, which would otherwise tend to rise, is maintained at a reasonable level.

I am fully aware that I may appear to be preaching a heresy here, as to avoid the mixing of susceptible young animals with infected adults has always been regarded as one of the first principles for the control of infectious disease, but the example has been used to show the active operation of the potent force of immunity and its influence in the prevention of these group diseases. I feel that a full appreciation of its force and importance is of the greatest value to the understanding of helminthiases. The principle of the control of helminthiases through immunity has been show to receive full recognition by the veterinarian but once understood it will enable him to explain the occurrence of disease in one set of circumstances and not in another; to see where the greatest dangers are encountered; to show in what direction precautions should be taken, and when it is most important and most advantageous to take action.

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Discussion*

In opening the discussion Mr. POWLEY said that in his experience mixed grazing of cattle and sheep was very commonly carried out in parts of the Highlands and seemed to be to the benefit of the pasture and of the sheep. He wondered whether it was also beneficial to the cattle? He thought that a considerable amount of work was still to be done in connection with the immunity response to external parasites. He had always maintained that the parasites responsible for sheep scab were able to remain dormant on the sheep's skin over long periods so that scab might reappear in a flock after some months. He knew, in fact, of one case where scab had reappeared after an apparent absence of two years' duration. In his opinion there was no doubt whatever that the parasites had been present in these animals during the whole of the period. He had noticed an interesting incidence of gid among the members of a certain flock folded on turnips. There had been a considerable percentage of infection among the hogs but infection among ewes was absent. Folding in this instance was so arranged that the hogs preceded the ewes to the new part of the crop and the shepherd had offered an interesting suggestion as to the reason for the distribution of infection. The shepherd had observed that the sheep-dogs preferred to defaecate among the untouched roots than to go on to the sheep-trampled ground which had already been folded, and Mr. Powley thought this a reasonable explanation for the appearance of gid among the hogs which under these circumstances would be the first to come into contact with food contaminated with the faeces of dogs.

Mr. SINCLAIR said that the mention of the occurrence of immune bodies in the blood serum was a new idea to him and he would like to know whether there was any possibility of immunising stock against parasitic worms along the same lines that had proved successful in bacteriology.

Mr. WILSON, referring to the speaker's observations in regard to the benefit of grazing ewes and lambs together, said he was surprised to hear that anything could be said in favour of this procedure. He thought that there must always be a considerable danger where young and comparatively uninfected lambs were grazed with heavily infected ewes.

Mr. GUTHRIE described an outbreak of parasitic gastritis among weaned animals in which only a comparatively small proportion of the flock were severely affected. On making an egg count, however, he found the number to be comparatively low. Phenothiazine treatment was instituted, and very good results followed. He would like to raise the question of black scour, also known as winter trichostrongylosis. This condition was seen when the animals were returned to the hill pastures after having spent some time in the Lowlands. He wondered why the disease should appear soon after the animals were returned to the mountain pasture and whether the dietetic change could be responsible? In regard to the comparative susceptibility to parasitic gastritis of late and early lambs, in his experience the late lambs were the more likely to suffer. As a matter of general interest he might mention that he had already this year encountered three separate outbreaks of acute fasciolasis in which sudden death had occurred in a number of animals. In none of these cases could any eggs be found in the faeces. *Post-mortem* examination, however, showed a considerable amount of haemorrhage into the peritoneal cavity and large numbers of small immature flukes in the liver.

Miss SPEYER asked whether the literature could give any example of the development of immunity to one species of parasitic helminth resulting in the development of immunity to other species at the same time.

Mr. SHANKS asked whether many of the parasitic nematodes commonly found in sheep might also occur in cattle, and whether the sheep were likely to be a danger to the cattle on that account.

Mr. SCOTT observed that he had gathered from Dr. Taylor's paper that age immunity was the most important aspect of immunity. He described the occurrence of strongylosis among young horses, and said that he wondered how it was, in view of the importance of age immunity, that some young horses appeared to be more susceptible than others of the same age, and that one or two animals among a group of animals of similar age might at times develop severe disease, while other members remained more or less healthy.

The SECRETARY (Mr. McKinna) wished to contribute a small observation which might pertain to the relative susceptibility of early and late lambs: in this instance the hosts were poultry and not sheep, but as the circumstances were rather similar he felt that the observation might apply. He had seen on several occasions that early chickens which were reared indoors and not allowed on to the grass until they were several weeks old thrived much better when once they were put out than did the chickens which were hatched later in the year but put out on to the grass at a younger age. He supposed that the rearing indoors and protection from infection while they were still young enabled them to build up their age immunity before they were asked to face any severe infection.

Mr. TWEED felt that the word "immunity" was not always correctly used. He thought that it should apply more particularly to reactions concerning the blood serum. He also made the observation that old animals are not always immune, as it had often been his experience to find parasites in adult animals. He referred also to the occurrence of husk in some years and not in others and supposed that the climatic factors were there responsible. In his view many opportunities were missed through not having research workers more often present in slaughter-houses. He referred to some white spots in the sheep's liver and asked whether Dr. Taylor could give any indication as to what they might be.

Mr. PROCTER raised the question of the re-seeding of land and wondered what the repercussions might be on the incidence of parasitism.

Mr. LOFTHOUSE requested some information on the length of time that husk parasites could lie dormant in the lambs. At that time he was in touch with an outbreak of husk among cattle on a farm which had been free from that disease for 20 years.

The Reply

In his reply to the discussion Dr. TAYLOR said that he had been very interested indeed to hear the many contributions, and in replying as best he could to the several points which had been raised he thought perhaps it would be best to begin with the matter of husk as that would be in everybody's mind at the moment. In his experience this disease was often confused with one of two or three different kinds of pneumonia common in calves, especially among calves which had been housed. This disease was frequently diagnosed on the cough alone without any efforts being made to demonstrate husk worm larvae in the faeces, and in his opinion there was little doubt that many of the supposed outbreaks of husk among housed animals were not due to the husk worm parasite at all. He had examined a considerable number of samples of hay and had yet to find his first husk worm larva, and he thought it possible that the outbreak referred to by Mr. Lofthouse was not husk. There was, however, another possibility: these parasites might easily exist from year to year without showing their presence, which was only made evident during those years in which they became sufficiently numerous to cause disease. Still another possibility concerning the occurrence of husk among housed animals had to do with manurial infection, and enquiring carefully into the history of certain outbreaks he had been satisfied on more than one occasion that the occurrence of infection synchronised with the placing of animals in certain dirty yards where scraps of herbage might be seen growing round old manure heaps. He thought it very probable that this herbage was heavily contaminated with the husk worm larvae and that it would be possible for an animal during a very short time, a matter of two or three hours perhaps, to acquire sufficient larvae to cause disease. At this point he would also like to refer to the matter of the greater incidence of husk in Jersey cattle, a point which had been raised by Mr. Powley. He had observed the same occurrence; in fact, on more than one occasion where husk had broken out among a mixed herd, the Channel Island cattle had been the only ones affected. He had written to some of the veterinary practitioners in the Channel Islands and had been informed that the husk worm parasite was unknown there. It might be supposed, therefore, that a breed resistance had no opportunity to develop and that individual cattle imported from the Channel Islands would be particularly susceptible because of having had no contact with the parasite in their youth. Replying to Mr. Sinclair's question concerning the preparation of protective sera or vaccines, Dr. Taylor said that although it had been possible to demonstrate the presence of these bodies in the helminthological laboratory, the possibility of any practical use being made of anti-helminthic sera seemed to be remote, since the amount of immune body in the serum, although demonstrable, was very small indeed.

He accepted Mr. Wilson's suggestion that lightly infested lambs were in danger where grazing with heavily infested ewes but wished to say that the conditions he referred to in his paper were different ones, in which heavily infested lambs were grazing with healthy ewes. He thought there was no doubt whatever that in these circumstances the ewes would help to clean the pasture rather than contaminate it.

Referring to what Mr. Guthrie had said on the greater susceptibility of late lambs over early lambs, Dr. Taylor said he was very glad to have that expression of opinion from one of Mr. Guthrie's experience. He thought that the contribution which the Secretary had made concerning the greater susceptibility of late chickens was also a pertinent observation. It seemed not unlikely that it was a wise procedure to protect young animals from as much infection as possible in order to give the opportunity for their age immunity to reach a high level, before they were brought up against severe tests. Of Mr. Guthrie's observation of low egg counts in hogs suffering from parasitic gastritis, Dr. Taylor said that that was a typical example of a case where the developed immunity had inhibited egg production of female worms. This was very frequently encountered in the examination of faecal material in animals of this age, and it was not unusual in flocks so affected to find some animals in poor condition suffering from parasitism and others of the same group in quite good condition, the latter having established their immunity some time previously and thrown off their parasite.

Referring to the matter of black scour, Dr. Taylor said that he did not regard the association of parasitic infestation with this condition as proved. He thought that the history of the outbreak of symptoms after the animals are returned to hill pastures was not at all characteristic of helminthic disease and that we must await further observations before concluding that this condition is due to the presence of *Trichostrongylus axei*.

In replying to Miss Speyer's question, Dr. Taylor said that although helminthic immunity was, in general, regarded as specific there was also, without doubt, a group immunity, and hosts which had become immune to such a disease as parasitic gastritis were unlikely to suffer again should they happen to come across a species of parasite with which they had not previously been infected. The same would apply in horses, where strongylosis in one part of the country or on one farm might be caused by a different member of the strongyloid parasites from that causing the disease on other farms.

With reference to the disease association of the grazing of cattle and sheep in the same pastures, a question which had been raised by Mr. Powley and again by Mr. Shanks, Dr. Taylor said that there was every reason to suppose that the sheep would benefit through the eating off of infective larvae by the cattle. In theory, however, it was not improbable that young cattle might suffer. The parasitic worms appeared to be easily transmissible from one kind of animal to the other, but whereas the faeces of sheep formed an excellent culture medium for the larvae, the faeces of cattle were comparatively unsuitable, a large percentage of larvae being destroyed in the middle of the faecal mass deposited by cattle. It was probable, therefore, that calves grazing pastures along with sheep and especially lambs, were in greater danger than when grazing pastures alone.

Referring to the question raised by Mr. Scott, Dr. Taylor said that the occasional appearance of heavy infestation in some individuals of a group of young animals might be explained on the grounds of uneven distribution of infective larvae in the pastures. This would particularly concern horses, which animals usually deposited their faeces in large masses. Actual observations made on the pasture showed that whereas the larvae of sheep worms were evenly distributed, those of horse worms were to be found in very large concentrations in certain small areas. Further observations on horse pastures had shown that closely grazed patches carried only some five or six larvae per pound of herbage, whereas long herbage from the ungrazed parts of a field which were reserved for defaecation contained some 5,000 to 6,000 larvae per pound. It was easy to see that under these conditions one animal might acquire a much heavier infestation than other members of the group.

Dr. Taylor agreed with Mr. Tweed that much more might be made of the opportunities of carrying out *post-mortem* examinations in slaughter-houses. With reference to the observation of parasites in aged animals, Dr. Taylor said that he had not intended to imply that immune animals were resistant to all traces of infestation. It was not improbable that a considerable part of the immunity of adult animals was in the nature of premunition, due to the presence of a small number of parasites in that animal. With reference to the pea-sized white spots on the sheep's liver, Dr. Taylor thought that in all probability these would be abortive larvae of *Taenia hydatigena*, which had been trapped in the liver substance during the course of their journey from the portal circulation to the peritoneal surface of the liver.

Mr. Procter had raised an interesting point in connection with the question of re-seeding. Although at first sight this might appear to be an excellent procedure and finally to dispose of parasitic infestation, he thought it must be borne in mind that larvae when ploughed in might very easily regain the surface. When the land was turned over or ploughed, each furrow rested lightly against the one in front of it, leaving an open space along which the larvae quickly ascended. They then climbed to the succeeding crop and, as under the modern system the ground might be grazed within five or six weeks, this was not done without danger. In fact in his opinion under certain conditions the danger might be very great indeed, since the moist conditions which would exist between the furrows would result in a high percentage of the potential infective material reaching the infective larval stage.

Mr. R. F. Paget, who has been investigating the incidence of hermaphrodism in goats, has ascertained that of 350 British Saanen kids born in this country in a seven-year period 193 were males, 105 females, and 52 hermaphrodites.

* By the Yorkshire Division, N.V.M.A.

Cattle Breeding Policies

Inaugural Meeting of the British Society for Animal Production

The inaugural meeting of the British Society for Animal Production was held at the London School of Hygiene and Tropical Medicine on Thursday, January 6th, 1944, Dr. John Hammond, F.R.S., was elected to the chair, and announced that as there had been over 100 replies to the relevant questionnaire, it had been decided to call the Society into being. The following provisional committee was elected: Dr. A. B. Fowler (Hannah Dairy Research Institute), Dr. J. Hammond (School of Agriculture, Cambridge), Mr. Alec Hobson (National Pig Breeders' Association), Mr. James Mackintosh (National Institute for Research in Dairying), Professor Wm. C. Miller (Royal Veterinary College), Mr. W. A. Stewart (Northamptonshire Farm Institute, Moulton), and Professor R. G. White (University College of North Wales). Dr. J. E. Nichols (Imperial Bureau of Animal Breeding and Genetics) was elected Secretary and Treasurer. Among those present at the meeting was Dr. R. T. Clarke, a member of the corresponding American society, who is visiting this country from the United States Department of Agriculture.

Three papers were presented to the meeting, each being followed by a discussion.

(1) The Breeding of Dairy Cattle (Dr. Joseph Edwards, School of Agriculture, Cambridge). Dr. Edwards, who had just returned from a tour of the United States, dealt with his subject under three headings.

(*a*) *Mass Improvement.*—This was the main object of those prosecuting the Ministry of Agriculture's new livestock policy. The gap between the pure-bred and the commercial dairy herd was much greater here than in the U.S.A., and it was this gap which the War Agricultural Executive Committees were attempting to bridge. It was not possible to find enough purebred bulls to replace all existing unsatisfactory bulls, and even if it were the step would be uneconomical. The risk of the spread of disease would itself probably be enough to prevent any rapid development in the use of communal or premium bulls, and there were additional factors operating against this method. Although the U.S. Federal Government had for 35 years supported the organisation of co-operative Dairy Bull Associations, the position since 1938 had been static, and in 1943 a total of 1,230 bulls serviced 41,500 cows (average, 34 per bull), whereas in the Artificial Insemination [A.I.] Societies during the same year, 574 bulls serviced 182,524 cows (average, 318 per bull). The many interesting aspects of A.I. in the U.S.A. would be dealt with in a report shortly to be presented by Dr. Edwards and Mr. J. N. Ritchie, of the Ministry's veterinary service.

By whatever means the dairy farmer obtained improved stock, one point was fundamental—better breeding called for better environment if the improved genetic potentialities were to be exploited. The Cambridge Society was laying the foundations of an educational programme that was at least as important as the breeding operations, and there would soon be an opportunity of comparing management and feeding practices between herds with similarly bred stock, and of helping those clearly in need of advice about rearing and milk production. Most members of American A.I. Societies, feeling that they now had dairy cattle worthy of attention, were demanding information on up-to-date practices from calf-rearing onwards, and so far as war-time conditions allowed, milk recording was also benefited.

(*b*) *Breeding of Pedigree Cattle.*—In the best pedigree herds in this country at the present time, progress was being made by the application of the methods of line-breeding, family breeding, and the use of progeny tested sires. In the U.S.A. the same methods were in use, but there the practices of private breeders were frequently the subject of scientific analysis and were discussed in public. The U.S. Federal Government (through the Department of Agriculture) and the State Universities played an important role, and their own herds could be used for more extreme forms of experimentation.

Dr. Edwards dealt with the breeding plans which have followed the initiation in 1930 (by Mr. Wallace, now Vice-President, U.S.A.) of the "superior germ-plasm" surveys, and referred not only to dairy cattle-breeding (in which the survey had taken the form of a search for progeny-tested sires), but also to long-term studies with hybrid maize, and to the large-scale trial with pigs now being co-ordinated by the Regional Swine-Breeding Laboratory at Ames, Iowa. He suggested that the less extreme forms of in-breeding, intelligent outcrossing, and the use of progeny-tested stock would continue to form the main lines of pedigree breeding both here and in the U.S.A. By the time the newer methods had been tested thoroughly with pigs, there might also have been discovered short-cuts that would make the processes less costly in the case of larger animals.

(*c*) *The Breed Societies.*—The efforts of the pedigree breeder should in all cases be supported by his Breed Society. Our Dairy Cattle Breed Societies could and should play a much more active and instructive part than at present, when, for example, it was difficult to obtain elementary pedigree particulars. Most of the record-keeping should be performed by the Society. In the U.S.A., the Purebred Dairy Cattle Association represented the interests of five dairy breeds (Jersey, Guernsey, Friesian, Brown Swiss and Ayrshire) and its recent advertisements included agreement on type-judging for all breeds, based on the ideal dairy type, and the adoption of uniform rules for the registration of cattle bred by A.I. The adoption of a standard length of lactation for progeny-testing purposes was also under consideration, and it seemed probable that agreement would shortly be reached on a 305-day lactation. The American Breed Societies also supported research work destined to help them, *e.g.*, on the blood-typing parentage test, which had already proved useful in cases where herd records had been lost or where sharp practice had been suspected.

More should be known of the location and quality of our best breeding herds of dairy cattle, which were a heritage of our livestock industry and should be regarded as a trust. After the war, Breed Societies should consider a permanent form of herd-type inspection to supplement herd records assembled in conjunction with the Milk Marketing Board, while the Societies and scientific institutions should consider the provision of scholarships so that suitably qualified students could examine the results of methods used in these élite herds. Every effort should be made to keep such herds intact if there was a risk that any be dispersed.

Opening the discussion on Dr. Edwards's paper, Mr. Jas. Mackintosh pointed out that in Great Britain our reputation had been gained not from dairy but from beef cattle. Butter fat percentage had not received such attention as milk yield, but in some breeds at least there was great room for improvement. The length of lactation to be taken for record purposes was a knotty point, and it was possible that individual breeds did need different lengths upon which to base standards. Other speakers referred to the importance of nutrition and management, and to the effect of nutrition upon conformation. The importance of the conditions under which records were taken was also stressed, and Mr. R. Braude (N.I.R.D.) made a plea for research in methodology of record-keeping. Dr. G. Dunlop (W. of Scotland College of Agriculture) pointed out the importance of environmental factors even within a single herd. Thus an average of 800 gallons per cow in one year might be equivalent to only 600 gallons in another year.

(2) The Breeding of Dual Purpose Cattle (Mr. W. S. Mansfield, University Farm, Cambridge). Mr. Mansfield discussed the place of dual purpose cattle in English farming, pointing out that in Scotland, perhaps on account of unsuitable conditions, there had never been many cattle of this type. It was often overlooked that only a small proportion of our milk-producing farmers were true dairy-farmers, *i.e.*, farmers drawing all or almost all of their income from the dairy herd; the majority were mixed farmers. At his own farm, a study of the accounts for the past year revealed that the milk sales represented the second largest item in the total net sales, although they formed only one-seventh of this total, which was otherwise made up of sales of corn, potatoes, sugar beet, seed, mutton, pork, beef, horses and poultry. On such a mixed farm, the cows must fit in and not dominate the scene. In other words they must (1) be capable of converting bulky by-products from other departments into milk; (2) make farmyard manure for the arable land and (3) breed heifer calves that could be reared for the dairy and bull calves that could be reared profitably for beef. These functions could be performed only by dual purpose cattle, and it was better on a mixed farm of this type to be content with an average yield of only 800 gallons than to try to raise the yield to 1,000 gallons and forfeit the other attributes of dual purpose cattle.

There was unfortunately a dearth of true dual purpose cattle, while far too many "no purpose" cattle were to be found. It was an admitted failing of dual purpose cattle that they did not breed true, owing to breeding methods which did not permit the fixing of the type. The type of animal aimed at was not, of course, the same in every herd. Dealing with some aspects of type improvement, Mr. Mansfield suggested that the only real solution was to practise in-breeding or long continued line-breeding.

The rearing and management of dual purpose heifers was inextricably woven with the breeding problem. If dual purpose heifers were to milk, they must be bred young, and must not be allowed to get fat although they must not be stunted. It was almost impossible to do the dual purpose heifer calf too well for the first six months of life, and if fed on a really high plane of nutrition during this time she would continue to grow fast for another 18 months, despite an alteration in the plane of nutrition due to the fact that she would then be feeding almost entirely on bulky foods. The heifer should be sufficiently well grown to mate at 20 months, and when she calves at 29 months would be as big as heifers six to nine months older which had been reared badly as calves. Many thousands of our dual purpose heifers were spoiled every year by bad rearing, by not being

mated until 30 months, or later, or by being allowed to get too fat between 16 and 24 months of age.

In the discussion on Mr. Mansfield's paper, several speakers suggested that the failing of dual purpose cattle was that they were not bred true, rather than that they did not breed true. Professor R. G. White urged the introduction of cattle in upland districts, in order to facilitate human settlements.

(3) The Production of Beef Cattle (Mr. W. A. Stewart, Northamptonshire Farm Institute, Moulton). Mr. Stewart referred to methods which had been employed with success by some of the great improvers of the past, *e.g.*, Bakewell, Hugh Watson and Amos Cruikshank. He discussed present-day problems under the following headings.

(*a*) *Supply of Beef Cattle.*—On *hills and rough grazings* it might pay, for the production of single calves, to run cows of the hardy breeds, *e.g.*, West Highland cows and a Beef Shorthorn bull on Scottish hills; Galloways with a Shorthorn bull, or blue-greys (Shorthorn-Galloway crosses) with an Aberdeen Angus bull as in S.W. Scotland; Welsh Cattle in Wales; Herefords and Devons on the Welsh Border and in the W. of England; Sussex on the marshes or downlands of the S.E. Even in these cases, however, milk yield was important. On *lowland farms* which were not suitable for milk production the most important factor was the overturn, *i.e.*, the number of calves reared per cow. It did not pay, in his experience, to keep a beef cow to rear, commercially, a single calf in a season. A scheme was needed whereby several calves per cow could be raised, and this might take the form of: (1) Hugh Watson's methods, *i.e.*, allowing cows intended for nursing to calve as early as January or February; putting on two calves which were ready for final weaning by the beginning of May; immediately replacing them with two more calves which were allowed some grass and were ready for final weaning by the beginning of August; and finally, rearing a fifth calf for the butcher from this time onwards; (ii) Mr. H. R. Overman's system of bulling a certain number of heifers, selling the greater proportion when freshly calved, and suckling all the calves on those retained; (iii) on farms where the accommodation for cattle exceeds that for dairy cows and the home-bred young female stock, rearing the steer calves for beef.

(*b*) *Feeding and Management.*—Where suckling was practised, it was important to see that calves took all the milk, that they were taught to feed from the trough before weaning, which should be gradual to prevent loss of calf flesh. Common pre-war errors in the feeding of beef cattle included excess of protein and of total concentrates. Ley farming was likely not only to increase stock carrying capacity but also to make possible the fattening of younger cattle in the Welland Valley and elsewhere, where formerly on the old pastures the graziers required old bullocks. This development would have an important bearing on the class of stock as well as on numbers.

(*c*) *Trends in Breeding.*—In recent years, the importance of milking qualities in the beef breeds had been largely overlooked; this was due largely to the Argentine demand, which had been responsible also for the preference in the show ring for a small, thick, fine-quality, fine-boned, short-legged type of pedigree animal. Was this type desirable for the ordinary British farmer? It was probable that a middle course between the production of this and larger types would be adopted, giving reasonable weight for age combined with early maturity. Finally, it was desirable that we got our beef cows back to something like the milking standard of Hugh Watson's, and this would probably be achieved most readily by the full use of bulls that were proven getters not only of offspring of a high standard of beef conformation and maturity, but also of daughters that were good milkers. Unless the cows of beef breeds could be improved as milkers, we should have to accept certain of these breeds simply as "bull-breeders," *i.e.*, of commercial value solely as a means of providing bulls for crossing. Even in cows of high-class beef type, however, 300 to 400 gallons in a lactation was not impossible.

Alastair N. Worden.

RESEARCH IN HUMAN NUTRITION

The Medical Research Council has established a unit for research in human nutrition as part of its staff organisation, and has appointed Dr. B. S. Platt as director. Temporary accommodation has been provided at the National Hospital for Nervous Diseases, Queen Square, London. Some part of the investigations undertaken by the unit will be directed towards nutrition problems in the tropics. Among other things, Dr. Platt will continue the work, for which he joined the Council's staff in 1938, of co-ordinating a programme of nutritional investigations in the colonies by arrangement between the Colonial Office and the Council.

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Many farmers in Cumberland still believe that the old method of ploughing with horses is preferable to the tractor, chiefly because of the deeper furrow. The horse trade in the county continues good, with a vigorous demand.

THE VETERINARY RECORD
March 18th, 1944

BRITISH SOCIETY FOR ANIMAL PRODUCTION: INAUGURAL MEETING

THE initiation of a new Society is always something of a hazard, and perhaps during war more especially so. The guarantee of success would seem to be that the new Society should meet a widely-felt need. It is just over two years since the Nutrition Society was formed, and already it has settled down to regular well-attended meetings at which a variety of topical subjects have been discussed. The Society of Dairy Technologists is hardly a year old, but it also has made a good start.

The Society for Animal Production has held its first meeting, and a Committee has been formed to draft a constitution. The title is wide enough to embrace practically every aspect of the breeding, feeding, management and even marketing of animals and their by-products. It is modelled somewhat on the lines of the American and the New Zealand Societies for Animal Production, and though the title is comprehensive, it is considered desirable to concentrate upon the aspect of animal production which has up to now been most neglected in Britain—the scientific study of animal breeding. Its activities will doubtless expand in time and may become to some extent sectionalised.

It has been felt for some considerable time that a forum was needed where the views and experience of the practical animal owner, be he pedigree breeder or not, and the work carried out by the scientist, the conclusions he has reached and the problems which he might be asked to solve, could be mutually discussed. In a country such as Britain, whose livestock have played a major part in so many countries overseas, it is remarkable that organised research in pure genetics and applied animal breeding has for so long been comparatively neglected. Organisations dealing with animal nutrition, animal disease, dairying, poultry husbandry, various aspects of marketing and of animal products, have been established, but apart from two small University Departments, one in Edinburgh and one in Cambridge (both of which have carried out successful and important research, considering their limited facilities), Government has done very little to encourage research in breeding or the exchange of authoritative opinion.

The realisation of this, and the likelihood of serious world livestock shortages, with a need to expand knowledge of animal production as widely as possible, have led to the formation of this Society. If well supported and assuming that growth and expansion take place so that all interests are represented and balanced conclusions are reached, it may go far to remedy one of the lacunae in our knowledge of livestock, and be capable of great usefulness to all concerned.

Achromotrichia in Man and Animals.—Incidental to vitamin B complex research it was noted that deprivation of pantothenic acid led to greying of the coat in rats and that supplying this vitamin in abundance to such rats later brought about a restoration of the normal colour. At once extravagant claims were made by nostrum vendors for preparations containing the vitamin as a preventive and restorative for greying hair, in persons of all ages. These claims were not supported by the use of the product. Recently reports of scientific tests are becoming available. They indicate that biologically men are not rats and they who would camouflage the flight of the years must still as heretofore rely upon dyes and be resigned to presenting an odd appearance.—*Vet. Med.*

CLINICAL COMMUNICATION

Subcutaneous Sarcoma in the Horse

By
W. LYLE STEWART, ERNEST GRAY AND
W. B. TOWELL

Subject.—Bay Clydesdale gelding, eight years.

History.—Soon after being turned out to grass at Whitsuntide the skin was noticed to be lumpy, but the horse's general condition was very good. About the middle of August he was thought to be "thick in the wind," so work was stopped and he was left out at grass. One of us (W. B. T.) first saw the horse at the beginning of September, and there was then much thickening of the right nostril, and this accounted for the noisy breathing evinced on exertion and whilst feeding. The horse was kept under observation and given alterative treatment.

Symptoms.—Innumerable hard, firm swellings, ranging from the size of a pea to that of a plum, were present under the skin but not adherent to it. They were spread practically all over the body except below the hock and knee, and were most numerous on the front of the chest, on the outer aspect of the upper third of the limbs, and in rows beneath the anus, where they ran down to the sheath and fanned out over the abdomen. The horse was eating well but losing condition, and there was evidence of slight dropsy. A course of aricyl (Bayer) was prescribed, followed by pot. iod. for ten days, but this treatment had no effect.

Diagnosis.—A small growth dissected from the neck was received at the Veterinary Laboratory in September for histological examination. It appeared to be a sarcoma composed of cells of rather varied size and shape and containing a few pigment granules. There were also some very small intracytoplasmic inclusions, the nature of which could not be defined. Blood counts showed a small lymphocytosis. In view of the fact that there were some points of similarity between the case and the condition in man known as glandular fever (infectious mononucleosis) the Paul-Bunnell agglutination test, using sheep's red cells, was tried but proved negative.

Post-mortem Examination.—During the following month the growths became more prominent on account of a rather rapid loss of condition. The lymphatic system appeared blocked and the horse was destroyed on account of debility and spreading oedema. The autopsy revealed oedematous limbs and it proved difficult to remove the hide. Firm tumour masses covered the subcutaneous tissues, especially in the flanks, gaskin, forearm, shoulder and perineum. In size the growths varied up to that of a florin, and many were clustered together and somewhat lightly embedded in the underlying structures. The internal organs of the animal appeared normal, and with the exception of the lumbar lymphatic glands, which were infiltrated by a small tumour mass, there was no signs of metastases. Notable, perhaps, was the small size of the spleen and the pale kidneys. Analysis of the urine showed: Sp. Gr. 1030; heavy deposit of phosphates and carbonates; no albumen, sugar or acetone bodies; no casts, blood cells or pus.

The lower third of the oesophagus was greatly thickened. The measurement of the muscular coat was almost uniformly 15 mm. throughout the thickened portion. Microscopical examination of sections of this portion did not reveal the presence of sarcomatous tissue. As the lower third of the oesophagus of the horse is normally thicker than the rest of the tube, a comparison was made between the oesophagus of the abnormal case and those of three horses destroyed for reasons other than neoplasia. It was found, however, that the thickening of the oesophagus in the animal in question was much greater than in the other three.

The septum nasi was greatly thickened and tumour masses were present on the floor of the premaxillae and on the superior maxillary bones. This no doubt accounted for the noisy breathing, particularly noticeable while eating. The horse had shown no difficulty in feeding or swallowing.

Conclusion.—Professor Bosworth, of the Royal Veterinary College, was kind enough to examine specimens from this horse, and was able to confirm our diagnosis of sarcomata. He also drew our attention to previous reports of subcutaneous sarcoma in horses, described by Anderson, R. G. (1913.) *J. comp. Path.* **26.** 52, and by Craig, J. F., and Davies, G. O. (1938.) *Vet. Rec.* **50.** 270. The former report states that on *post-mortem* examination the nasal septum was found thickened, but neither records any abnormality of the oesophageal wall. Both these reports describe the sarcomata as being of the round cell type; the sarcomata now described, however, were not typically round celled, but somewhat variable, and in parts shaded over to a hyperplasia suggestive of an irritant origin.

ABSTRACTS

[The Principles of Percutaneous Absorption. Rothman, S. (1943.) *J. Lab. clin. Med.* **28.** 1305-1321.]

This is a review covering most of the work dealing with absorption from the skin published during the period 1920–41. It contains information of some interest to veterinarians.

Water is absorbed from the skin of invertebrates, fish and amphibia, whereas in mammals there is probably no absorption, except possibly for traces passing through the skin pores. The general rule that substances soluble in lipoids are absorbed whereas those insoluble in lipoids are not is true almost without exception.

Phenols are readily absorbed provided that they are not present in a concentration great enough to produce caustic effects. In very strong solution the coagulation of the skin proteins actually lessens absorption. Salicylic acid and its esters are easily absorbed whereas sodium salicylate almost entirely fails to penetrate the skin. Sex hormones, vitamins A and D, and carotene are very easily absorbed whereas the water soluble ascorbic acid is probably not absorbed at all.

Free alkaloid bases such as nicotine, strychnine and the opium alkaloids are easily absorbed, whilst salts of alkaloids are not.

Incorporation of a substance in a fat or oil does not necessarily increase absorption. It has even been reported that oestrogens are absorbed more readily from aqueous solutions than from oily vehicles. The virtue of ointment bases is mainly mechanical: rubbing causes the base and the substances incorporated in it to penetrate the hair follicles and so brings them into more direct contact with absorbing surfaces. Inclusion in an ointment will not bring about absorption of substances which are not otherwise absorbed. Sodium salicylate, for example, cannot be made to penetrate the skin no matter what vehicle is used. The recent introduction as vehicles of "wetting agents" seems to offer considerable hope of greatly enhancing absorption from the skin in both man and animals.

E. G. W.

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[Histological Changes in the Retina of the Vitamin A Deficient Horse. Andersen, H. E., and Hart, G. H. (1943.) *Amer. J. vet. Res.* **4.** 307.]

The authors describe in some detail the normal histology of the retina in the horse and the methods adopted for producing suitable histological sections. Most of the observations are based on a study of one vitamin A deficient filly and one normal gelding. In the vitamin A deficient animal the bacillary layer showed an accumulation of lipoid material which caused distortion of the outer segments of the rods and cones and disturbed their intimate contact with the overlying pigment epithelium. The findings are discussed with special reference to rhodopsin (visual purple) and night blindness. It is suggested that the substances necessary for the formation of visual purple reach the pigment epithelium from the blood and are then passed on to the outer segments of the rods. It is generally agreed that in the absence of vitamin A the visual purple which has been bleached by exposure to light cannot be re-formed. The authors suggest that the pigment cells abstract from the blood large amounts of lipoid material in an attempt to obtain sufficient vitamin A (in vitamin A deficient animals) and that this lipoid then collects in the bacillary layer and causes its disorganisation.

The histological features of the retina in the normal and vitamin A deficient horse are illustrated by some very striking photomicrographs.

E. G. W.

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[Histopathology of Anasarcous Lesions Observed in Natural Cases of Vitamin A Deficiency in Cattle. Creech, G. T., and Seibold, H. R. (1943.) *Amer. J. vet. Res.* **4.** 353.]

The occurrence of widespread subcutaneous oedema in vitamin A deficient cattle has been reported by several workers. The present authors describe in detail the gross and histological features as seen in twelve natural cases. The subcutaneous and intermuscular tissues contain a sero-gelatinous fluid which in some cases is present in such large amounts that it continues to drip from the carcase for some hours. The carcase lymph nodes are swollen and oedematous, the subcutaneous tissues show some cellular infiltration, and the muscle fibres exhibit both hydropic and atropic changes (vacuolation, loss of striation, fibrillar separation, segmentation). In some cases there was actual hyalinisation and complete disintegration of muscle fibres. Small arteries and arterioles in the oedematous areas were seen by the naked eye to appear unduly prominent and histologically showed marked intimal hyperplasia, the lumen becoming eccentric and, in some cases, occluded.

E. G. W.

QUESTIONS IN PARLIAMENT

Livestock

Mr. Granville asked the Minister of Agriculture if it is his intention to carry out a war-time census of all farm livestock; and upon what basis and by what methods this enquiry will be undertaken.

Mr. Hudson: Farmers make a quarterly return of the numbers of their livestock, and have done so throughout the war. In addition, county war agricultural executive committees are making detailed herd surveys, in furtherance of the Government's livestock improvement policy.

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Land Fertilisation

Mr. Wootton-Davies asked the Minister of Agriculture if he will institute a large-scale scientific enquiry as to the relative value of the different means of adding to land fertilisation.

Mr. Hudson: Investigations on different aspects of this subject are constantly in progress and the need for extending them is continually under review by the Ministry in conjunction with the Agricultural Research Council.

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Hill Sheep Subsidy

Sir Waldron Smithers asked the Minister of Agriculture what is the total number of hill sheep in Great Britain which are eligible for the hill sheep subsidy; and will he give the figures by districts.

Mr. Hudson: The total number of sheep in Great Britain in 1942 in respect of which subsidy was paid, was approximately 4,127,000. The numbers in the principal hill sheep farming districts were:—

Scotland	2,240,000
Wales and Welsh Border Counties	985,000
England:	
Northern Counties	860,000
South-Western Counties	41,000

Similar figures for 1943 are not yet complete.

Sir W. Smithers: In view of the importance of these hill sheep, as a foundation for other flocks, will the Minister give an undertaking that no recommendations as to alterations of breed will be carried out without notice?

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East Africa (Dog Licences)

Sir R. Gower asked the Secretary of State for the Colonies if he will cause the Governments concerned to impose a dog tax in East Africa to diminish lack of proper care and disease of these animals.

Mr. Emrys-Evans: I have been asked to reply. Annual licence fees for dogs are already payable in townships in Kenya, Uganda and Tanganyika, and generally in Zanzibar, Northern Rhodesia and Nyasaland. The relevant legislation provides adequately for the control of dogs, including registration and destruction in cases of non-registration, and for anti-rabies measures. Except in Nyasaland, legislation exists in all the East African territories which makes it an offence to cause or to permit to be caused, any unnecessary suffering to any animal.

The International Trade Policy Committee of the Federation of British Industries (after consultation with the trade association members of the Federation and in collaboration with the Empire Executive Committee) has presented its report on post-war international trade policy to the Grand Council, which has adopted its recommendations. In the course of the report it is stressed that industry desires the prosperity of British agriculture, which is an important home market. "But the Committee points out that any artificial stimulation of those branches of agriculture most affecting this country's cost of living could only result in our competitive position being prejudiced. An early decision should be reached on what this country's agricultural policy should be."

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Weekly Wisdom

There are three kinds of people. There are those in favour of Beveridge, those against him, and those who have read him.—Dr. L. S. Potter, Assistant Secretary of B.M.A., quoted in *Evening Standard*, January 10th.—*Lancet*, 1944, January 22nd, p. 138.

NOTES AND NEWS

The Editor will be glad to receive items of professional interest for inclusion in these columns.

Diary of Events

Mar. 23rd.—Annual General Meeting of the South-Eastern Division, N.V.M.A., at Maidstone, 2.30 p.m.
Mar. 24th.—Meeting of the Midland Counties Division, N.V.M.A., at Birmingham, 2.30 p.m.
Mar. 29th.—R.C.V.S. Committee Meetings.
Mar. 30th.—Central Veterinary Society. **Luncheon in honour of R.C.V.S. Centenary**, Connaught Rooms, Great Queen Street, Kingsway, W.C.2; *2.30 p.m.*—General Meeting at the Kingsway Hall, Kingsway, W.C.2.
Mar. 30th.—**R.C.V.S. Council Meeting.**
April 1st.—R.C.V.S. Annual Fee due.
May 9th.—**R.C.V.S. Council Election.** Last date for receipt of nominations.
May 22nd.—R.C.V.S. Council Election. Voting papers issued.
May 30th.—R.C.V.S. Council Election. Last day for receipt of voting papers.
June 6th.—**R.C.V.S. Annual General Meeting.**
June 7th.—R.C.V.S. Committee Meetings.
June 8th.—**R.C.V.S. Council Meetings.**
June 27th.—R.C.V.S. Examinations begin (provisional date).

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Roll of Honour

Capt. A. A. B. Ellis, M.R.C.V.S., Commandos

A Tribute

We have received the following tribute to Captain Arthur Alfred Burdon Ellis, M.R.C.V.S., whose death on active service was announced recently:—

It is with a feeling of regret and deep sorrow that the former colleagues of Captain A. A. B. Ellis, M.R.C.V.S., Commandos, previously missing, learn that is now known to have died of wounds in September, 1943. Ellis came from a family of soldiers and had been through Sandhurst some years before the present war. He fought on the N.W. Frontier of India, but soon resigned his commission and came to the Royal Veterinary College as a student; he was therefore more mature than the majority of his fellow students. He qualified in December, 1937, and soon afterwards joined the staff of the Research Institute in Animal Pathology, Royal Veterinary College.

In the early days of the war he made many attempts to rejoin the combatant forces, and when he came with us to Streatley he was restless, for he had been trained as a soldier and felt he should be employed as such.

The formation of the L.D.V. (afterwards the Home Guard) gave him some opportunity for an outlet in a military field and he threw himself into this work and helped to train those of us who were poor amateurs. He acted as the second in command of a local platoon composed of residents and students and was not only respected but liked by them all. No one who accompanied Ellis on those night patrols will ever forget his keenness, ability and stamina—for he was no mean boxer, too. Eventually he was commissioned in the R.A.S.C. and soon afterwards achieved his desire by joining the Commandos.

We mourn a loyal and delightful colleague, one who enjoyed life and sparkled with humour of a quiet kind. Our sympathy goes out to his wife and child and to his father and mother, Colonel A. C. S. B. and Mrs. Ellis.

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PERSONAL

Births.—Ford.—On March 3rd, 1944, at the Brunswick Nursing Home, Cambridge, to Alice, wife of R. Ford, B.Sc., M.R.C.V.S., D.V.S.M., of Cambridge, a sister for Judith.

Francis.—On March 6th, at The Croft Nursing Home, Cheadle Hulme, to Sally, wife of John Francis, B.Sc., M.R.C.V.S., a daughter, Susan.

Lake.—On Sunday, March 12th, 1944, at "Ivy House," Ashby-de-la-Zouch, to Connie, wife of Derrick A. Lake, M.R.C.V.S., the gift of a daughter.

Ovington.—On February 24th, 1944, to Greta, wife of R. P. Ovington, M.R.C.V.S., of Church Street, Newent, Glos., a son.

Skea.—On Wednesday, March 1st, 1944, at Mountblair, Old Scapa Road, Kirkwall, Orkney, to Helen, wife of Arthur Skea, M.R.C.V.S., a daughter.

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Marriage.—Brocklehurst—Burton.—On March 1st, at Roby Parish Church, Lieutenant Frank B. Brocklehurst, R.A.V.C., youngest son of Mr. and Mrs. W. Brocklehurst, of Whitefield

House, Tarbock, nr. Prescot, to Isobel W. Burton, M.R.C.V.S., second daughter of the late Mr. W. C. Burton and Mrs. Burton, Wilton Gardens, Glasgow.

Royal Society of Edinburgh.—Mr. Alan Douglas McEwen, D.Sc. (Edin.), M.R.C.V.S., Chief Bacteriologist, Moredun Institute, Animal Diseases Research Association, Gilmerton, Midlothian, was among those elected Fellows of the Royal Society of Edinburgh at the meeting held on March 6th, 1944.

Veterinary Bequests

Livesey Medal: The Prevention and Alleviation of Pain and Fear in Animals.

Mr. Geoffrey Herbert Livesey, M.R.C.V.S., of Gloucester Terrace, W., left £8,896 (net personalty £8,802).

Mr. Livesey left £500 to the Royal College of Veterinary Surgeons to be invested and applied to the award of a medal, to be called the Livesey Medal, every three years or after such longer interval as the Council may find necessary, to the person who, in the judgment of the Council, has done most serviceable work towards the prevention and alleviation of pain or fear in animals. The medal is to be of the value of £25 and any balance is to be paid to the recipient of the medal to encourage him to continue his work. He left £500 to the Royal National Lifeboat Institution, with the ultimate remainder to the Veterinary Educational Trust.

Captain James Fairbairn Player, M.R.C.V.S., 29, Dundas Street, Edinburgh, who left estate valued at £34,494, bequeathed £500 each to the Victoria Veterinary Benevolent Fund and the Royal (Dick) Veterinary College, Edinburgh.

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LISTER'S DOCTRINE IN ANIMAL SURGERY

Under the above title, our contemporary, the *Journal of the American Veterinary Medical Association* (1943, Dec., **103**, 378) points a moral from a short historical digest, the significance of which will not be lost to our British readers. "The dogmatism of Sir Joseph Lister," it says, "came upon the practice of medicine in the late 1860s, flourished in the upper cadre of medical scientists in the 1870s, and was widely practised unchallenged in the 1880s. Yet in 1891 the *Manual of Operative Veterinary Surgery* by Liautard dismissed the subject in a few lines by saying that Lister's methods 'cannot be recommended to the attention and adoption of the veterinary surgeon.' In the chapter on *Surgical Therapeutics*, the reader is told to 'free the wound of blood, pus, and any foreign body or substance capable of *causing irritation*.' There was much ado about rolling bandages and applying them neatly 'to avoid suffering.' Germs were to be taken care of by wadding. Pasteur was quoted as saying that wadding has a direct action on pus and 'renders fermentation impossible.' These teachings blocked the progress of aseptic surgery in animals because the author of them was regarded as the highest authority in this country. No one was bold enough to protest, least of all down East, and inasmuch as the author was the editor of our only journal, facts about the application of Listerism to animals came but slowly into the clinical field. The exciting revelations (and they *were* exciting) of the bacteriologists, in so far as surgery was concerned, were dubbed impracticable, irrelevant and unnecessary. The idea conveyed never entirely died out, for up to this day the teachings of Lister are not set down as a *sine qua non* of a veterinary surgical operation.

"The classical surgery of the French schools in the 1880s was *Précis de Chirurgie Vétérinaire*, a treatise of 1,650 pages in two volumes by Peuch and Toussaint. It is silent on the teachings of Lister, just as the English literature was. Toussaint is remembered as one of the early veterinary bacteriologists. This can only mean that veterinary surgeons were not quick to comprehend wound infection. To P. and T., peritonitis and gangrene following castration of colts was caused by rough handling of the spermatic cord.

"If one turns to *Principles and Practice of Veterinary Surgery*, by William Williams (1894), there is no assurance found that Sir Joseph was known in home territory. Here, one is told to make sure that the colt about to be castrated is not sick, that it is dieted for a day, that the scalpel be shaped right and sharp, habitat not filthy, and weather favourable before tackling the job. Several pages go to these directives, none to the little matter of sterilisation or otherwise disposing of germs. Antiseptic surgery was then 20 years old. As late as 1911, one might have seen teachers of veterinary surgery wiping bloody scalpels on the seat of the pants. To the more careful, swishing the knife in a creolin solution (all-important drug of the day) was standard precaution. As to sutures and suturing, it would be impolite to tell the incredible truth.

"In 1943, things have improved, outwardly. Sites are abluted and shaved and painted, instruments and sutures sterilised, hands gloved or washed, and white gowns worn, all of which is to the good. Yet, the meticulous critic watching for technical flaws might see great gaps wide open for instreaming flora. Excellent literature of 40 years ago governing every detail of handling microbes in animal surgery, economic and ecologic factors duly weighed, seems to be forgotten. General knowledge of the tenacity and distribution of the ambient flora surrounding a veterinary surgical operation is useless if every detail of the art of modern Listerism is not kept uppermost in the mind in every act.

"No wonder that veterinarians have grabbed voraciously at carbolic acid, creolin, iodoform, mercuric chloride, acridine dyes, and the sulphonamides as they came, one after the other, into his reach. What a relief it must be to throw sulphanilamide into wounds of one's own making.

"Quoting from a book (*Wound Treatment*, by E. Wallis Hoare, L. A. Merillat, *et al.*, 1915), written 30 years ago: 'He who based his management of wounds upon the fact that the new tissue that sprouts from the walls of a traumatic cavity under normal conditions grows safely to a useful, mature tissue without outside help, is a successful healer. . . . We lack the refinement that enables the human surgeon to make and manage successfully enormously large wounds. . . . Is it not fact that we fear the extensive surgical wound because of its bad behaviour? . . . And is it not true that we fear to invade the splanchnic cavities and the synovials?'

"As of the 1940 decade, in this connection, one may now report that methods which should have been adopted, boldly and often, 50 years ago are coming into general use through the demonstrations on bovine Caesarean sections of Tom Ferguson and the equine abdominal invasions of Jim Farquharson.

"Speaking again of the economic and ecologic situations which dog the veterinary surgeon, his task is to overcome them. The 'surgically dirty' conditions and the low fees do not change the scientific facts. Rightly, the small-animal surgeon may boast of his meticulous ways but his entourage cannot be compared with that of the farm."

This article, doubtless written or inspired by the distinguished editor of our American contemporary, Dr. Merillat, evidently conveys an impression of learning and experience. Many of its statements are, however, highly provocative. Listerism, as enunciated by its original exponent, is now obsolete. Unlike his great contemporaries, Pasteur and Koch, Lister was not a working bacteriologist. Faith in the efficacy of a disinfectant—such as Lister used when he employed carbolic acid *à outrance*, as a spray for disinfecting the air of the operating theatre and for sterilising instruments and other surfaces—is no longer reposed upon by the modern surgeon. "Antisepsis" has given way to "asepsis," though here again, as the writer of the article rightly stresses, much show may be made by an operator only partly versed in the economy and ecology of bacteria while all the time neglecting the real sources of danger. To one over-impressed with such showmanship it would be a revelation to witness the apparent ease and lack of precautions taken in their routine work by highly experienced bacteriologists, dealing, as they often do, with most highly virulent bacteria, such as glanders bacilli. Yet, on close inspection, it would soon be observed that none of the essential precautions was overlooked. In some ways, therefore, a good discipline in routine bacteriology would seem to be the only way to acquire a real knowledge of the risks of wound infection. It must seem strange to the bacteriologist sometimes what ill-assorted precautions against infection are taken by workers whose fields, as in the case of virus workers, approach, even closely, to his own.

On closer consideration, however, it will be found that not even the discipline of the "pure" bacteriologist affords sufficient warranty of competence to cope with the complex problem of wound infection. During the last war, of 1914-18, it was believed that great advances had been made by the application of continuous irrigation, especially with the well-known Carrell-Dakin solution, an effort to wash away or destroy bacteria while at the same time interfering as little as possible with healthy granulation. During the more recent Spanish Civil War this doctrine was again upset when Trueta, at Barcelona, rediscovered the method that had been found best in the Napoleonic Wars, namely, that after thorough cleansing and freshening (*débridement*) of the wound to remove foreign material and dead tissue, it was best to fill it up with a sterile pack, bandage firmly, and leave it alone, rapid healing then taking place under the putrefying discharges. In the course of the present war, the position is again changing. The discovery of the sulphonamides and experience in their use just before the war; and the remarkable exploitation which it has been found can be made of the property long known that certain types of micro-organisms have of exerting an antagonism towards other microbial species (see Dubos, R. J., and Hotchkiss, R. D., 1941, *J. Exper. Med.*, **73**, 629); these have transformed the outlook greatly. Already, in "penicillin," the product of the growth of a species of mould, dramatic results have been reported in combating wound infection. Doubtless, several variants of this product will soon be tried and recommended. Precautions against specific

infections, such as tetanus and gas gangrene, with certain protective materials which stand to the credit of the bacteriologist and immunologist, still need to be taken. In the medical and scientific literature recently, reports have been published of conferences devoted solely to the problem of wound healing and infection; an imposing array of workers with highly specialised knowledge in different fields of work—surgeons, bacteriologists, cytologists, chemists, etc.—have contributed at these meetings to the advancement of knowledge on the problem. Hence, the subject of wound healing is not a static one, referable back to the Listerian creed as final pronouncement upon it. It does not, moreover, fall within the purview of any particular group of workers, not even the bacteriologists. On reflection one wonders whether, after all, the old-time veterinarian, in carrying out his work skilfully, with proper regard to cleanliness and expedition, need always and invariably have been accused of such grave shortcomings as compared with some of his more impressively arrayed and equipped modern counterparts in whose real knowledge of the problem they profess to master there are still easily discernible wide and numerous lacunae. J. T. E.

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MINISTRY OF AGRICULTURE NEWS SERVICE

Saving Meat.—The U.S. Department of Agriculture and the States began their campaign for the eradication of bovine tuberculosis in 1917 and now shipments of beef and veal under Lend-Lease are providing a rod to measure its success. Dr. A. E. Wight, of the Bureau of Animal Industry, who is in charge of the scheme, has said that, under the Federal meat inspection service, from 40,000 to 50,000 cattle carcases were condemned each year on account of tuberculosis. In recent years less than 2,000 a year were being rejected—a saving in beef and veal of about 17 million pounds a year. The War Food Administration report on Lend-Lease shipments for the first eight months of this year shows that the total beef and veal items were just over 13 million pounds, a yearly rate only slightly in excess of the 17 million pounds of meat saved through tuberculosis having been almost stamped out in U.S. cattle herds.

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Surplus Straw.—There are several good ways of putting back into the land our present abundance of straw. Oat straw fed to livestock saves hay. One pound of oat straw plus 2 lb. of kale equals 1 lb. of hay—so does 1 lb. of oat straw with 1 lb. of wet grains. Other straws, treated by the caustic soda process, have even higher feeding values. For bedding and litter use straw freely to soak up urine and excreta so rich in plant food. Use as much bedding as possible—excess straw keeps animals dry, healthy and comfortable. A covered yard adjacent to the milking shed could be used on many farms. Here the cows, instead of lying in cowsheds, can tread quantities of straw and keep themselves clean. Field enclosures, with straw stacks or walls of baled straw, make useful yards for stock of all kinds and provide large quantities of convenient manure.

A long stubble, or straw broken up, may be ploughed in to produce humus and improve soil texture. One ton of straw contains as much plant food as ½ cwt. sulphate of ammonia, ½ cwt. superphosphate and ½ cwt. muriate of potash. The best time for ploughing in is soon after harvest, while the soil is still warm, and preferably when the straw is wet from rain. Additional nitrogen will be required by the crop in spring. Other methods include foddering in the fields and littering of folds. Composts may be made by running or pumping urine on to heaps of broken straw. Vegetable wastes and yard scrapings can be added. Where rainfall is low, extra water may be required to make the heap sufficiently wet.

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Free Straw Pulp Plants.—Straw pulp plants are still available and will be installed free of charge on farms which are considered suitable. Originally this offer was open to dairy farms only but experience has proved that straw pulp is also valuable for store and fattening cattle. So the offer of a free plant is now extended to farms that keep this class of stock.

As a substitute for roots this winter, straw pulp should prove valuable, especially in districts where crops have been poor. When treated, one ton of straw will produce 3½ tons of pulp, which has the same starch equivalent as 4 tons of roots, of a ½ ton of crushed oats or dried beet pulp, or of one ton of average quality hay. Farmers should apply to their County War Agricultural Executive Committee.

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Mr. Tom Williams, M.P., Joint Parliamentary Secretary to the Ministry of Agriculture, speaking at Stafford recently, said the sheep population had fallen to a low level. That had been inevitable in the early years of the war, but now we needed as many sheep as the land could carry, not only for meat but for the good they did to the soil. Mr. Williams hoped that breeders would keep more ewes for breeding this year.

"The long-term policy for agriculture which the Government is now going to frame must be primarily one for livestock," said the Duke of Norfolk as President of the Veterinary Educational Trust at a lunch given by the Bloodstock Industry Committee. "If we are to improve on livestock—horses, cattle, sheep and pigs—we have to tackle the diseases which afflict them in a much more ardent manner than we have in the past," he added.

The Kent Farmers Union at a meeting of the Executive Committee at Maidstone on Thursday of last week, decided to contribute one hundred guineas to the Trust.

CORRESPONDENCE

The views expressed in letters addressed to the Editor represent the personal views of the writer only and must not be taken as expressing the opinion or having received the approval of the N.V.M.A.

Letters to the Editor should reach the Office not later than by the first post on Monday morning for insertion in following Saturday's issue.

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[**Notice to Correspondents.**—In view of the large number of letters now being received for publication on the subject of the R.C.V.S. Council Election, intending correspondents are requested to note that, owing to heavy pressure on our space, it has been found necessary to limit these to a *maximum of 250* words for the future. For the same reasons, this limit of 250 words has been placed upon the election addresses of candidates, all of which will be published in our issue of *May 20th.*]

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THE ONE-PORTAL SYSTEM AND THE COMING R.C.V.S. ELECTIONS

Sir,—Mr. Matthews's comments, in to-day's issue, on the letters which were published in your issue of February 12th need not be taken up by the writers: they are gratuitous.

His letter, nevertheless, is a revelation of the dangers that are lurking around and ahead; it brings forth conviction that publication of those letters was not untimely.

To say that, of necessity, "the profession must seek full university status for its colleges or continue to remain largely unrecognised as a scientific body," is, if we look around among ourselves, ridiculous.

Believing what was alleged in my youth that a doctorate in science of the University of London implied the hall-mark of scientific distinction, I strove to obtain it, with much hardship. Now after 30 years I must confess I am somewhat disillusioned. It would be absurd to contend that many of our leading veterinary scientific workers who took no such university degree have proved less efficient as veterinary scientists through not having it. The profession itself has already requited them as among its most eminent scientific members from the standpoint of achievement. On the other hand, there are some in the profession whose diligence was directed towards embroidering their names with the title of "doctor" of some university who have not clearly proved the worth of holding a university degree.

Far sooner, to adjudge proficiency in the veterinary art and assess matters of professional discipline, would I have men of the solid worth of a large number of the members of our profession than many such as sit on the academic boards of universities.

The manner of imparting a veterinary education is a complex subject the solution of which calls for constant watching in view of advancing knowledge and the ever-widening field embraced. If the universities have changed their historic antipathy towards it, as so appears, from motives which we need not look into too closely, let us by all means see what is the contribution they—or, indeed, any other responsible body—have to offer to its advancement at this stage.

But to determine the tests for proficiency in an art which has been in development, let us not forget, since the dawn of history, and to regulate, likewise in the interests of the public, the conduct of its practitioners as a professional body, our one-portal system, with all that it implies, it is strongly urged, stands ever in need of being firmly held, and, moreover, strengthened.

Mr. Matthews states: "In return for satisfactory offers to this end I should be prepared to hand over latchkeys to responsible bodies, to bargain with a strong asset while we have it."

My plea would be a categoric NO to all that.

Yours faithfully,

The Yews, High Road, Byfleet. J. T. Edwards.

March 7th, 1944.

Sir,—In his letter published in your issue of March 4th, my friend Mr. H. T. Matthews chastises the letters which have already appeared anent the one-portal system. He speaks of vague and platitudinous phrases in a vague and platitudinous way. In fact, he has presented us with a veritable myriorama, yet he would deny us the right and privilege of shaking the kaleidoscope when we desire the scenes to change. He would call in others to do the shaking for us. No doubt in his kindness of heart he would ask that we be allowed to have a peep every now and then just to have a view of the wonderful scenes depicted therein. I am afraid, however, that we should be in the same position as is the boy whose father gets hold of his kaleidoscope—we would have to wait until these other and more expert "wanglers" of the instrument had got all they could out of it.

A great issue is before the profession and before I register my votes I want to know on which side the respective candidates are and I have no doubt that many others, including Mr. Matthews's supporters, think likewise. I do not want the R.C.V.S. to be relegated to the position of a door-keeper whose breast would be decorated by the insignia of various degrees. I want the R.C.V.S. to be the manager of our business and the management to be in accord with the wishes and aspirations of the majority of the profession.

Yours truly,

Larks Hall Farm, J. McCunn.
Chingford, Essex.
March 5th, 1944.

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Sir,—Mr. H. T. Matthews in his letter to *The Veterinary Record* of March 4th states, "There are many who believe that the profession must seek full university status for its colleges or continue to remain largely unrecognised as a scientific body." Veterinarians will be regarded as members of a scientific body as and when their skill and methods justify such recognition. We all know that our work has improved of recent years by reason of various discoveries which have made it possible in many cases to abandon empiricism for rational treatments. More important still, we are gradually re-orientating our work and equipping ourselves for the great tasks to be carried out in the field of preventive medicine. These advances will certainly continue and everyone will recognise them—that is, everyone closely concerned with our work. But these changes must necessarily be reflected in the teaching methods of our schools. As opposed to Mr. Matthews there are many of us who feel that our well-established colleges are more than able to deal adequately with this work, provided they receive financial grants commensurate with the importance of their work to agriculture. These grants are needed to pay for the extra staff and clinical material required to satisfy the demands created by the problems connected with the study of preventive medicine.

No one will deny that university contacts for our graduates will be beneficial, but it should be remembered that these contacts can be made during the non-clinical years. Under By-law 62, the R.C.V.S. has the power to grant exemption from various subjects when these have been studied at the universities. With goodwill on both sides, it should not be difficult to formulate a pre-clinical course terminated by a degree in Natural Science which would be accepted by the R.C.V.S. as exempting veterinary students from the pre-clinical work at our colleges. Again, post-graduate study at the various universities for those wishing to specialise might be so arranged as to qualify for a veterinary degree. Yet when all is said and done it is our work alone and not our university status which will recommend us to the world at large. Therefore, let us see to it that the standard of our entry to the profession is maintained at a high level; we need then have no fear of the infiltration methods of those who would hand over the examining prerogative granted to us by Royal Charter to any university that might decide to run a veterinary course.

Yours faithfully,

Sevenoaks. L. P. Pugh.
March 6th, 1944.

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Sir,—Might I suggest to your correspondents that in fairness to all those who are candidates, the electorate be permitted to form its own decision after our election addresses have been published? It should be quite clear to all that no progress can be made in any sphere if the holding of an election results in the representation of the view of only one side.

In any election the guiding principle of those who vote should be the past record of the candidate, and if he is promoted to a higher sphere will it be of benefit to those who elect him.

In the early days of the South African War, President Kruger was portrayed in a cartoon as saying: "They asked me for my coat and I gave it to them; they asked me for my waistcoat and I gave it to them; but when they asked me for my trousers I refused, because I knew that the independence of South Africa was in peril."

Regarding our existing system on the same basis, I am not prepared to discard this fundamental garment, until offered a better pair, which must not be of a utility type, *e.g.*, our teachers and students being absorbed into an existing faculty not devoted entirely to veterinary science.

The frequent statements appearing in other columns that our standard of learning is very much below that in other countries, cannot be too strongly refuted. The facts are that in many instances it appears to have outpaced the wisdom of some of our graduates, and that the existing veterinary services are neglected and not by any means utilised to the extent they could be, and are, in these other countries.

Yours faithfully,

"Rothiemurchus," J. F. D. Tutt.
St. Cross, Winchester.

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Sir,—Mr. H. T. Matthews makes a brave effort to confuse the issue, but brings forward no new argument. Among other things, he says we are "largely unrecognised as a scientific body" (a phrase vague and platitudinous enough, surely, to deserve his own shears), but against that I make the proud claim that we *are* largely recognised as a body which honestly earns its keep: the veterinary surgeon has far less call to explain himself than any of the vaguer scientists.

Since you are kind enough to give space for *voters'* election addresses, here is mine: I vote for the candidate who declares his allegiance to the one-portal system (and Heaven help him if he goes back on his declaration within four years). I do *not* vote for any two-faced Janus who wants a free hand with a bunch of latchkeys.

Yours faithfully,

Bath. Esmond Brown.
March 7th, 1944.

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Sir,—The forthcoming R.C.V.S. election appears largely to be a party election comparable with those of daily political life. The one side composed of gentlemen who have in the past and will in the future fight tooth and nail for the rights, independence and success of the profession. These, the one-portal supporters. The other side, the multi-portalites, who, it appears, are prepared to sell the profession to someone or anyone for varieties of reasons, none of which can be justified as in the interests of the profession.

As one of the newly qualified, and a past member of the Student Representative Council of the R.V.C., I may say that the graduates of my generation, together with the present students, feel very strongly about the one-portal system and its future. This opinion represents now and will represent later a large voting body, which I feel sure will record their individual votes in favour of those who have served the profession honestly in the past and who will do so again in the future.

Yours faithfully,

St. Austell, Cornwall. Robert S. Townson.
March 5th, 1944.

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RECRUITMENT REQUIREMENTS OF THE VETERINARY PROFESSION

Sir,—I note that in a report, published in the public Press, the Duke of Norfolk has said that the "nation requires 2,000 more vets." The occasion was a luncheon given under the auspices of the Veterinary Educational Trust. I am very intrigued by this statement and would like to know the grounds on which it was made. I am sure that the veterinary practitioners in this country are interested also, for if this estimate be true it means that in every place where a veterinary surgeon is practising there will be room for at least one and a quarter more. Can the business stand this? Have some people completely forgotten the law of supply and demand? The profession of chemistry should be an object lesson to us. Owing to the great increase in numbers in that profession following the last war, which was a chemists' war, the market was flooded and many graduates were unable to get positions in their chosen calling and perforce had to accept jobs of as low a status as labourers. I hope for the sake of new graduates that my fears are unfounded.

Yours truly,

Larks Hall Farm, J. McCunn.
Chingford, Essex.
March 5th, 1944.